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# (12) UK Patent Application (19) GB (11) 2 372 758 (13) A

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INT CL<sup>7</sup> E04H

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(54) Abstract Title

Fence pale

(57) A fence pale (P) includes at least one hole (3) which, in use, receives a fastener such that an underside of the fastener head is in contact with a surface of the pale, and an integral shoulder (20) is located adjacent each hole so that, in use access to the underside of the fastener head is denied and the fastener cannot be prised away from the pale.

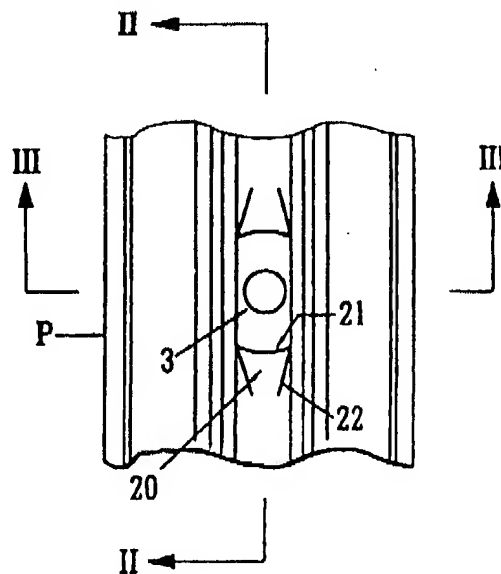


FIG. 1

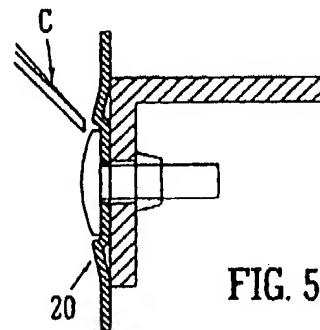


FIG. 5

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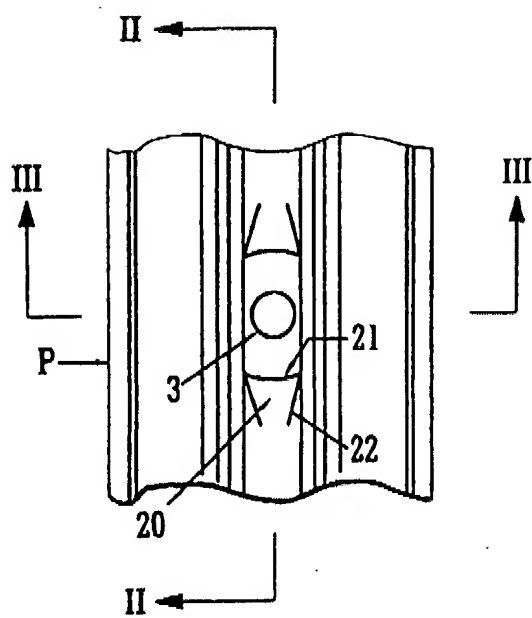


FIG. 1

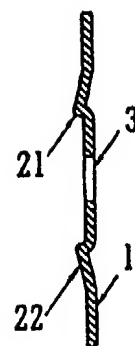


FIG. 2

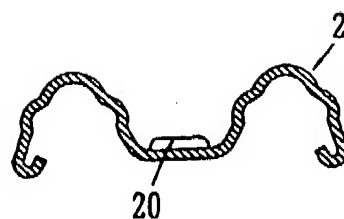


FIG. 3

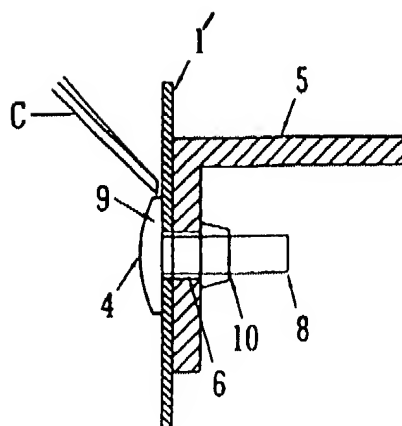


FIG. 4

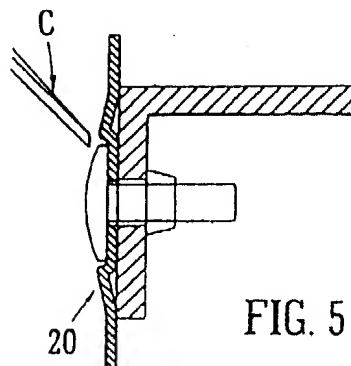


FIG. 5

## FENCE PALES

The invention relates to a fence pale and in particular to one for use as a security  
5 fence.

It is usual to build a fence of spaced, upright posts joined together by usually  
horizontal members, referred to as rails. Typically the pales and the rails are made of  
metal and these are joined together by fasteners, either bolts and nuts or rivets, passing  
10 through aligned holes.

A security fence cannot guarantee absolute security from a determined thief. The  
thief may try to remove the head of the fastener by use of a sharp tool e.g. a chisel, or  
prise a fastener from the assembly. The thief needs to be able to get the tool behind the  
15 fastener head for this purpose.

Security fences have been proposed which address this issue, for example, those  
described and claimed in GB 2241721 and GB 2307493. However, each of the prior art  
fences requires elements additional to the pale, rail and fastener to achieve the desired  
20 result.

A further security fence, comprising posts and mesh sections has been proposed  
in GB 2250757. This, similarly, relies on the provision of elements additional to the posts,  
mesh sections and fasteners. It also discloses the use of fasteners with frangible portions  
25 to ensure the heads thereof cannot be attacked..

It is an object of this invention to provide a solution to this problem, in which a security fence requires a minimum of components, thereby increasing the ease of assembly and reducing the capital cost of manufacture and assembly.

5           According to a first aspect of the invention, there is provided a fence pale for a security fence, the pale having at least one hole to receive a fastener having a head and a shank, with the shank extending through the hole and the underside of the head being in contact with the surface of the pale, characterised by integral shoulder means located adjacent the or each hole, said shoulder means being shaped to deny access to the  
10 underside of the head of a so-received fastener, whereby the fastener cannot be prised away from the pale.

The pale may be a cold-formed metal section, preferably steel, shaped to have a longitudinal web and a longitudinal wing portion extending from each side thereof, the  
15 hole and shoulder means being present in and on the web respectively.

Preferably the shoulder means comprises two shoulders on diametrically opposite sides of the or each hole, e.g. above and below the hole when the pale is vertical.

20           The wing portions preferably extend out of the plane of the web, such that, in co-operation with the shoulders, they deny access from every direction of the so-received fastener, in use.

Preferably each shoulder comprises a ramp portion rooted remote from the or  
25 each hole and inclined upwardly theretowards and terminating in a face portion inclined downwardly towards the or each hole.

In a further aspect of the invention, there is provided a method of forming a pale comprising cold-rolling steel to form an elongate member having integral shoulder means and forming a hole in the member, the hole being located such that said shoulder means are adjacent thereto.

5

A third aspect of the invention provides a method of forming a pale comprising forming a hole in an elongate steel member and cold-rolling that member to form a pale having integral shoulder means adjacent the hole.

10

In order that the invention may be well understood it will now be described by way of example with reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a plan view of part of the length of a pale;

Figure 2 is a section taken on lines II – II on Figure 1;

15

Figure 3 is a section taken on lines III – III of Figure 1;

Figure 4 is a partial sectional view of an assembly showing a chisel attack on a prior art pale; and

Figure 5 is a partial sectional view of an assembly showing a chisel attack on a pale according to the invention.

20

The pale P comprises a length of metal section, e.g. steel, cold rolled to have a major web 1 and two side wings 2, the wings 2 extending out of the plane defined by the major web 1. Spaced-apart holes 3 (only one shown) are present in the major web 1 to receive fasteners 4 (Figure 5) by which a rail 5 is joined to a pale P. The holes 3 may be  
25 formed before or after cold rolling. The fasteners 4 are passed through the holes 3 in the pale P and an aperture 6 in the rail 5. Each fastener 4 has a nut or collar 10 to secure the assembly and hold the components P, 5 together.

According to the invention, shoulders 20 are present on the web 1 on diametrically opposite sides of the hole 3. Each shoulder 20 is generally wedge shaped, as seen in plan, having a wider curved wall 21 near the hole 3. The wall 21 rises relatively steeply from the web 1 and then descends in a ramp portion 22 to merge with the web remote from the hole 3.

The curved shape of the hole-facing wall 21 allows that wall 21 to at least partially encompass the perimeter of a head 9 of a fastener 4.

10

As shown in the top half of Figure 4, where no shoulder 20 is present, a chisel C can be put behind the head 9 of the fastener 4 to remove the head 9 from the fastener 4 or, alternatively, force the fastener 4 from its' collar 10 and so destroy the assembly.

15 In contrast, and as shown in Figure 5, the shoulders 20 prevent such an attack in a pale P of the invention. The side wings 2 act in concert with the shoulders 20 to ensure that there is no point from which a chisel C may be forced under the head 9 of the fastener 4.

20 The invention is not limited to the embodiment shown. More than two shoulders may be present; they need not be of the shape shown. The pale need not be vertical.

## CLAIMS

1. A fence pale for a security fence, the pale having at least one hole to receive a fastener having a head and a shank, with the shank extending through the hole and the underside of the head being in contact with the surface of the pale,  
5 characterised by integral shoulder means being located adjacent the or each hole, said shoulder means being shaped to deny access to the underside of the head of a so-received fastener, whereby the fastener cannot be prised away from the pale.
- 10 2. A pale according to Claim 1, comprising a cold-formed metal section shaped to have a longitudinal web and a longitudinal side wing extending from each side thereof, the hole and shoulder means being present in and on the web respectively.
3. A pale according to Claim 2, wherein the metal is steel.
- 15 4. A pale according to Claim 2 or Claim 3, wherein said shoulder means comprises two shoulders on diametrically opposite sides of the or each hole.
5. A pale according to any of Claims 2, 3 or 4, wherein the side wings extend out of the plane of the web, such that, in co-operation with said shoulder means, they deny  
20 access from every direction of the so-received fastener, in use.
6. A pale according to Claim 4 or Claim 5 when dependent on Claim 4, wherein each shoulder comprises a ramp portion rooted remote from the or each hole and inclined  
25 upwardly theretowards and terminating in a face portion inclined downwardly towards the or each hole.



7. A security fence comprising a plurality of pales according to any preceding Claim, joined to one or more rails by a plurality of fasteners, the fasteners extending through aligned holes in the pales and rails.
- 5 8. A method of forming a pale, the method comprising cold-rolling steel to form an elongate member having integral shoulder means and forming a hole in the member, the hole being located such that said shoulder means are adjacent thereto.
9. A method of forming a pale, the method comprising forming a hole in an elongate  
10 steel member and cold-rolling that member to form a pale having integral shoulder means adjacent the hole.
10. A pale as hereinbefore described with reference to Figures 1, 2, 3 and 5 of the accompanying drawings.



Application No: GB 0129698.7  
Claims searched: all

Examiner: Joanne Pullen  
Date of search: 5 June 2002

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): E1D DF109, DLCKM, DLCKN DLEKMN, DLEKNB

Int Cl (Ed.7): E04H

Other: Online: EPODOC, WPI, JAPIO.

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, E	GB 2363400 A (HADLEY INDUSTRIES) See integral shoulder formed from longitudinal side wing in Figure 2.	1 & 7
X	GB 1584760 A (OSELAND) Figure 2 and page 1 lines 39-58.	1 & 7

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.